Sub B1

49. A method of providing a custom orthodontic appliance for repositioning teeth of a patient comprising:

communicating, from an orthodontic practitioner, three-dimensional information from the mouth of a patient of the shapes of the teeth of the patient;

displaying, on a computer display for inspection by a person viewing the display, images of the teeth of the patient in suggested tooth positions and orientations that are based on the three-dimensional information;

communicating, from the person viewing the display, feedback information regarding tooth positions and orientations toward which the teeth of the patient are to be moved by orthodontic treatment;

providing a custom orthodontic appliance that is configured to urge the teeth of the patient, when installed thereon, toward tooth positions and orientations that has been manufactured based on the suggested tooth positions and orientations in accordance with the feedback information.

Sub B2

50. The method of claim **49** wherein:

the person viewing the display is the orthodontic practitioner; and

the feedback information includes information selected from the group consisting essentially of information of changes to the suggested positions or orientations and information approving tooth positions and orientations toward which the teeth of the patient are to be moved by the appliance.

51. The method of claim **50** further comprising:

providing the orthodontic practitioner with a computer interface device and displaying the images thereon;

providing the computer interface with a capability for the entry by the orthodontic practitioner of the feedback information.

52. The method of claim **50** further comprising:

if change data is entered, redisplaying, images of the teeth in revised tooth positions and orientations for inspection by the orthodontic practitioner;

53. The method of claim **49** wherein:

the three dimensional information is derived at least in part from an impression of the teeth of the patient from the orthodontic practitioner; and

the displaying of the images of the teeth of the patient is in response to data digitized from a model of the teeth made from the impression.

54. The method of claim **49** further comprising:

communicating the three dimensional information to a remote computing facility for the derivation therefrom of the suggested tooth positions and orientations; and

receiving from the remote computing facility digital images of the teeth of the patient in the suggested tooth positions and orientations for the displaying thereof on the computer display.

55. The method of claim 49 further comprising:

communicating the three dimensional information to a remote computing facility for the derivation therefrom of the suggested tooth positions and orientations; and

receiving from the remote computing facility digital images of the teeth of the patient in the suggested tooth positions and orientations for the displaying thereof on the computer display;

communicating, to a remote orthodontic appliance manufacturing facility having equipment thereat for manufacturing the custom orthodontic appliance, data that includes three-dimensional information of the shapes of the teeth of the patient and information regarding tooth positions and orientations toward which the teeth of the patient are to be moved by orthodontic treatment; and

receiving from the remote orthodontic appliance manufacturing facility the custom orthodontic appliance for providing the appliance to the orthodontic practitioner for the treatment of the patient.

56. The method of claim 49 further comprising:

communicating, to a remote orthodontic appliance manufacturing facility having equipment thereat for manufacturing the custom orthodontic appliance, data that includes three-dimensional information of the shapes of the teeth of the patient and information regarding tooth positions and orientations toward which the teeth of the patient are to be moved by orthodontic treatment; and

receiving from the remote orthodontic appliance manufacturing facility the custom orthodontic appliance for providing the appliance to the orthodontic practitioner for the treatment of the patient.

57. The method of claim **49** wherein:

the feedback information includes information selected from the group consisting essentially of information of changes to the suggested positions or orientations and information approving tooth positions and orientations toward which the teeth of the patient are to be moved by the appliance;

the method further comprises:

providing the person viewing the display with a capability for entering change data from the orthodontic practitioner into a computer indicating selected changes in the suggested tooth positions and orientations;

if change data is entered, displaying on the computer images of the teeth in revised tooth positions and orientations.

58. The method of claim **57** further comprising:

establishing a digital communications link between the computer display and a digital computer at a remote location;

transferring the three-dimensional information in digital form to the remote location;

deriving with the digital computer at the remote location the suggested tooth positions and orientations;

communicating digital data of the suggested tooth positions and orientations from the remote location to the computer display over the digital communications link;

communicating the change data to the remote location over the digital communications link;

recalculating the revised tooth positions and orientations with the digital computer at the remote location in response to the change data;

communicating digital data of the revised tooth positions and orientations from the remote location to the computer display over the digital communications link.

59. The method of claim **57** further comprising:

communicating entered commands accepting tooth positions and orientations to the remote location over the digital communications link;

processing of the data of the accepted revised tooth positions and orientations and of the three-dimensional information and the designing of the custom orthodontic appliance with the digital computer at the remote location.

60. The method of claim **59** further comprising:

transmitting data of the design of the custom orthodontic appliance from the remote location over the digital communications link;

displaying images of the designed custom orthodontic appliance on the computer display in response to the transmitted data;

transmitting appliance modification data to the remote location and redesigning the appliance with the digital computer at the remote location in response to the transmitted appliance modification data.

61. The method of claim **49** wherein:

the custom orthodontic appliance includes positioning jigs having surfaces thereon that conform to the shapes of the teeth of the patient.

62. The method of claim **49** wherein:

the custom orthodontic appliance includes positioning jigs having surfaces thereon that conform to the shapes of the teeth of the patient; and

the method further comprises:

locating the jig on the patient with said surface conforming to the shape of the one or more teeth,

positioning the appliance on the one or more teeth with the jig, and

bonding the appliance so positioned to the tooth.

63. A system for manufacturing an orthodontic appliance comprising means, including a programmed computer, for performing the method of claim **49**.

64. A system for manufacturing an orthodontic appliance comprising means, including a programmed computer, for facilitating the performance of the method of any of claim **49**.

65. A method of providing and installing an orthodontic appliance to reposition the teeth in the mouth of a patient comprising:

producing a model of the mouth of a patient at a treatment location, from which model three-dimensional information of the shapes of the teeth of the patient and/or their positions in the mouth of the patient can be derived;

transmitting the model from the treatment location to a remote location for inputting of the three-dimensional information into a digital computer thereat, for producing three-dimensional digital representations of a plurality of the teeth of the patient from the three-dimensional information input therein and for deriving, with the digital computer thereat from the three-dimensional representations, suggested relative tooth finish positions and orientations that define the shapes of each of the teeth of the plurality and/or their positions and orientations relative to each other;

transmitting, from the remote location to a computer at a treatment location, digital data of the derived suggested tooth finish positions and orientations, and displaying images of the teeth in the suggested relative tooth finish positions and orientations;

entering instructions on the computer terminal at the treatment location and transmitting the instructions to the remote location;

manufacturing at a production location, in response to digital data and the instructions, an orthodontic appliance having at least some surfaces thereof that conform to the shapes of the teeth of the patient, which appliance, when installed on the teeth of the patient by placing said surfaces thereof in conforming contact with corresponding surfaces of the patient's teeth, urge the teeth of the patient toward the tooth treatment positions and orientations; and

at the treatment location, installing the appliance on the teeth of the patient by placing said surfaces thereof in conforming contact with corresponding surfaces of the patient's teeth.

66. The method of claim **65** wherein:

the model is a three-dimensional physical model cast from a mold of the patient's teeth at the treatment location; and

the method includes scanning the physical model at the production location and producing a high resolution, three-dimensional data file of the patient's teeth thereby.

67. The method of claim **66** wherein:

the scanning includes scanning the model with a laser and producing three-dimensional digital data of the surfaces of the patient's teeth thereby.

68. The method of claim **67** wherein the scanning includes:

scanning the model and producing a low resolution digital image thereby;

selecting data of the low resolution digital image data that conforms to portions of the low resolution image for consideration in determining tooth finish positions and appliance design;

scanning the model in accordance with the selected data to produce high resolution, three-dimensional images of at least portions of surfaces of the patient's teeth which contact other teeth or the appliance.

Sub B7

69. The method of claim **65** wherein:

the instruction entering includes adjusting computer images of a tooth by changing a tooth's torque angle, tip angle, rotation angle or position relative to others of the patient's teeth by an orthodontic practitioner on a computer at the treatment location.

Sub B8

70. The method of claim **65** wherein:

the manufacturing step includes manufacturing an appliance that includes brackets for connection to the teeth at calculated placement positions on the surfaces thereof and includes removable jigs having surfaces thereon that conform to the shapes of the teeth of the patient and connect to the brackets to position and orient the brackets relative to those surfaces, such that, when the jigs are connected to the brackets and the surfaces thereof are fit onto the teeth with the surfaces thereof conforming to the surfaces of the teeth, the brackets are supported at the calculated placement positions for bonding to the surfaces of the teeth.

Sub B9

71. The method of claim **71** wherein:

the orthodontic appliance manufacturing includes removably connecting each of the brackets to a corresponding one of the jigs; and

the method includes providing the appliance to the treatment location with brackets and jigs removably connected.

72. The method of claim **65** wherein:

the orthodontic appliance manufacturing includes depositing material in accordance with a calculated appliance design, layer by layer, until a three-dimensional object the size and shape of an orthodontic appliance or component thereof, or a negative form from which the appliance or component can be made, is defined by the deposited material.

73. The method of claim **73** wherein:

the material is selectively formed in each layer of a first portion of material that is removable chemically, thermally or mechanically, and a second portion that remains after removal of the first portion to form a solid object the shape of a custom orthodontic appliance or component thereof.

74. The method of claim **74** wherein:

the solid object is a pattern having said shape and the manufacturing further includes forming a mold with the use of the pattern and casting the orthodontic appliance or component thereof therein.

75. The method of claim **75** wherein:

the material is wax of two types, one forming said first portion and one forming said second portion, and the deposition thereof to selectively form the layers includes the selective jet printing of the layers to define a cross section of the object with said second portion forming the pattern and being surrounded by a removable medium formed of said first portion.

SubB12

76. The method of claim **65** wherein:

the orthodontic appliance manufacturing includes forming bases for a plurality of brackets of a set from an integral sheet of base material, each base having an archwire support blank attached thereto, and cutting archwire slots in each of the archwire supports by supporting the sheet and moving a cutting tool relative thereto.

77. The method of claim **65** wherein:

the orthodontic appliance manufacturing includes cutting a curve in a form in the custom shape of an archwire, placing a wire length in the cut curve and heat treating the wire while held by the form to impart to the wire the shape of the cut curve.

SubB13

78. A custom orthodontic appliance providing system comprising:

a computer interface remote from an orthodontic appliance manufacturing facility at which is located;

the computer interface being programmed to display images from the mouth of a patient based on three-dimensional information of the shapes of the teeth of the patient and/or their positions in the mouth of the patient;

the interface means including means for displaying images of the teeth in the suggested tooth positions and orientations derived from the three-dimensional information input into a digital computer;

the computer interface including means for inputting data of the accepted or revised tooth positions and orientations for the designing a custom orthodontic appliance for the patient.

79. The system of claim **79** further comprising:

a machine at the orthodontic appliance manufacturing facility operative in response to digitized data of the designed custom orthodontic appliance to manufacture an orthodontic appliance so designed that is configured to urge the teeth of the patient, when installed thereon, toward the revised tooth positions and orientations.

80. The system of claim **79** further comprising:

a digitizing device at a location remote from the computer interface for generating digital image based on three-dimensional information of the shapes of the teeth of the patient and/or their positions in the mouth of the patient.

81. The system of claim **79** further comprising:

means at the computer interface for entering change data indicating selected changes in the suggested tooth positions and orientations;

means for recalculating revised tooth positions and orientations in response to the change data;

the computer interface including means for redisplaying images of the teeth in the revised tooth positions and orientations for inspection by the orthodontic practitioner and means

for entering commands from the orthodontic practitioner accepting the revised tooth positions and orientations;

82. The system of claim **79** further comprising:

a digitizing device at a location remote from the computer interface for generating digital image based on three-dimensional information of the shapes of the teeth of the patient and/or their positions in the mouth of the patient, the device including a low resolution optical scanner for producing a low resolution digital image of the shapes of the patient's teeth, and a high resolution optical scanner producing three-dimensional images of at least portions of surfaces of the patient's teeth in response to a selection from the low resolution digital image.

83. The system of claim **79** wherein:

the computer interface includes means for providing controls to an orthodontic practitioner for inputting change data of torque angle, tip angle, or rotation angle information for individual teeth; and

the means for recalculating revised tooth positions and orientations in response to the change data is operative to recalculate the revised tooth positions and orientations in response to the input angle data.